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Epidemiologic Notes and Reports

Acanthamoeba Keratitis Associated with Contact Lenses — United States

Twenty-four patients with *Acanthamoeba* keratitis have been reported to CDC from 14 states in the last 9 months (Table 1). Although onset of illness for some patients dates to as early as 1982, most had onset of illness in 1985 or 1986. In two patients, the infected eye was enucleated; 12 patients underwent corneal transplantation.

Twenty (83%) of the patients wore contact lenses. Of these, two wore hard lenses (one hard, the other rigid gas-permeable); four wore extended-wear soft lenses; and 14 wore daily-wear soft lenses. Ten of these 20 patients cleaned their lenses with home-made saline solution prepared by mixing salt tablets with bottled, distilled, nonsterile water; four used commercially available lens-cleaning solutions followed by a tap water rinse; one used commercial bottled saline; and one cleaned lenses with tap water pumped from a private well. No lens-care information was available for four patients.

Twenty-two (90%) of the 24 patients were initially diagnosed as having corneal herpes simplex virus (HSV) infections; in the other two patients, corneal lesions were attributed to autoimmune disease. *Acanthamoeba* keratitis was diagnosed by examination of stained corneal scrapings or tissues (67%) and/or tissue indirect fluorescent antibody (IFA) test (52%) using species-specific antisera. Acanthamoebae were isolated from the corneal scrapings/biopsies of 17 (71%) of the patients. Three of the 17 patients' lens cases containing home-made saline solution were also cultured; all were positive for *Acanthamoeba*. Contact lens cases from other patients were not cultured. Patients' ages ranged from 17 years to 55 years; half were females. The right eye was affected in 13 (54%) patients and the left eye, in 11. *A. castellanii* was identified from nine (38%); *A. polyphaga*, from eight (33%); *A. rhysodes*, from four (17%); *A. culbertsoni*, from three (13%); and *A. hatchetti*, from one (4%). The species of *Acanthamoeba* was not determined for six (25%) patients. More than one species of *Acanthamoeba* was cultured from samples from four patients.

Reported by C Newton, MD, Louisville, Kentucky; WT Driebe, Jr, MD, University of Florida, Gainesville, LR Groden, MD, G Genvert, MD, JH Brensen, PhD, University of South Florida, Tampa; AD Proia, MD, GK Clintworth, MD, M Cobo, MD, D Klein, PhD, Duke University Medical Center, Durham, P Morton, MD, Raleigh, North Carolina Dept of Human Resources; T Wolf, MD, University of Oklahoma, Oklahoma City; DB Jones, MD, RL Font, MD, M Osata, PhD, Baylor College of Medicine, Houston, MC Kincaid, University Health Science Center at San Antonio, MB Moore, MD, R Silvany, University of Texas Health Science Center at Dallas, Texas; RJ Epstein, MD, LA Wilson, MD, Emory University, Atlanta, Georgia; RA Miller, MD, P Gardner, MD, RC Tripathi, MD, DF Sahm, PhD, University of Chicago, Illinois; JS Wolfson, MD, S Foster, MD, MA Waldrom, Massachusetts General Hospital and Harvard University, Boston; CF Bahn, MD, Naval Hospital, Dept of the Navy, Bethesda, Maryland; G Rao, MD, FS Nolte, PhD, University of

TABLE 1. *Acanthamoeba* keratitis — United States

Patient	Age	Sex	Affected eye*	State of residence	Proba mont of ons
1	17	F	R	Ga.	11/8
2	23	F	L	Fla.	04/8
3††v	23	F	R	Tex.	01/8
4	28	F	R	Md.	06/8
5	31	F	R	Tex.	06/8
6	32	F	R	N.C.	04/8
7v	33	F	R	N.J.	08/8
8	38	F	R	Ky.	09/8
9	38	F	L	N.C.	12/8
10	38	F	L	Ca.	198
11	44	F	R	Okla.	08/8
12	55	F	L	Minn.	12/8
13	17	M	L	N.C.	01/8
14	20	M	R	Fla.	08/8
15	22	M	L	La.	05/8
16	25	M	R	Tex.	08/8
17	28	M	L	Ill.	07/8
18	38	M	R	Ca.	Unk
19	44	M	L	Fla.	01/8
20vC	41	M	L	Tex.	06/8
21v	45	M	R	Tex.	06/8
22	45	M	L	Tex.	07/8
23	47	M	L	N.Y.	09/8
24C	51	M	R	Mass.	08/8

*R = right eye; L = left eye.

†DWSL = daily-wear soft lens; EWSL = extended-wear soft lens; basis.

§BS = bottled saline; CLsC = commercial lens cleaner; HMS = ho TWR = tap water rinse; WW = well water; ? = no information.

¶IFA = indirect fluorescent antibody; ND = not done; + = positive;

**A.c = A. castellanii; A.cu = A. culbertsoni; A.h = A. hatchetti; A.p

††v = corneal trauma; C = enucleated.

§§Cultured from contact lens case; △ = corneal scraping positive f

Acanthamoeba *Keratitis* — *Continued*

Probable month of onset	Contact lens association		Diagnostic method		Species of *Acanthamoeba* **
	Lens†	Cleaner§	Culture	Tissue IFA¶	
11/85	RGPL	HMS	+	+	*A.c*
04/85	DWSL	?	+	+	*A.r*
01/86	None	NA	+	ND	*A.*sp
06/85	EWSL	CLC, TWR	+	+	*A.p*
06/84	DWSL	HMS	+	ND	*A.*p, *A.*sp
04/85	DWSL	HMS	+§§	+	*A.c, A.p*
08/85	DWSL	HMS	+§§	ND	*A.p*
09/85	HL	CLC, TWR	Δ	ND	*A.*sp
12/85	DWSL	BS	ND	+	*A.c*
1982	DWSL	?	ND	+	*A.cu*
08/85	DWSL	WW	ND	+	*A.c*
12/85	DWSL	HMS,PHS	+§§	ND	*A.c*
01/86	EWSL/U	HMS	+	ND	*A.c*
08/85	DWSL	HMS	+	ND	*A.*sp
05/85	DWSL	HMS,PHS	+	–	*A.p, A.h*
08/84	DWSL	HMS	+	+	*A.c*
07/83	DWSL	?	+	+	*A.c, A.r, A.p*
Unknown	DWSL	?	ND	+	*A.cu*
01/86	EWSL	CLC, TWR	+	ND	*A.cu*
06/85	None	NA	+	+	*A.r*
06/85	None	NA	ND	+	*A.c*
07/85	DWSL	CLC, TWR	+	ND	*A.p*
09/85	EWSL	HMS	+	ND	*A.c*
08/84	None	NA	+	?	*A.p*

lens; HL = hard lens; RGPL = rigid gas-permeable lens; /U = used on a daily

= home-made saline; NA = not applicable; PHS = periodic heat sterilization;

itive; – = negative.

i; *A.p* = *A. polyphaga*; *A.r* = *A. rhysodes*; *A.*sp = *Acanthamoeba* sp.

itive for cysts.

Acanthamoeba *Keratitis* — *Continued*

Rochester Medical Center, Rochester, New York; C Parlato, MD, JC Davis, PhD, Mountainside Hospital, Montclair, New Jersey, E Cohen, MD, Wills Eye Hospital and Thomas Jefferson University, Philadelphia, Pennsylvania; MJ Mannis, MD, CE Thirkill, PhD, University of California, Davis; Protozoal Disease Br, Div of Parasitic Diseases, Center for Infectious Diseases, CDC.

Editorial Note: Members of the genus *Acanthamoeba* are the most common free-living amoebae in fresh water and soil. They have been isolated from brackish and sea water, airborne dust, and hot tubs. Acanthamoebae have also been recovered from the nose and throat of humans with impaired respiratory function and from apparently healthy persons, suggesting that these organisms are commonly inhaled (*1*). It is, therefore, not surprising that acanthamoebae may contaminate contact lenses or lens-cleaning/soaking fluids.

The first case of *Acanthamoeba* keratitis in the United States was reported in 1973 in a South Texas rancher with a history of trauma to his right eye (*1*). *A. polyphaga* was repeatedly cultured from his cornea, and both trophozoite and cyst forms of the organism were demonstrated in the corneal sections. Since then, 31 patients have been diagnosed in the United States (excluding those reported here). Nineteen of these 31 cases have been published (*2-12*); seven occurred before 1981; four occurred in 1981; one, in 1982; five, in 1983; and two, in 1984. The 24 *Acanthamoeba* keratitis cases described here represent a striking increase over those reported in previous years. A similar increase has been observed in the use of contact lenses during the past 5 years, from 14.5 million in 1980 to 23.1 million in 1985 (*13*).

Review of the 19 published cases indicates that nearly all infections were preceded by some degree of ocular trauma and/or exposure to contaminated water. Only recently has it been suggested that wearing contact lenses or using contaminated lens-cleaning/soaking solution may predispose the wearer to developing *Acanthamoeba* keratitis (*10*). Although information on contact lens use was not specified in all the published reports, at least 13 of the 19 patients were known users, and in the present report, 20 (83%) of 24 patients wore contact lenses.

Acanthamoebae are resistant to killing by freezing, dessication, a variety of antimicrobial agents, and levels of chlorine that are routinely used to disinfect municipal drinking water, swimming pools, and hot tubs (*14*). Recent studies indicate that *thermal* disinfection systems for contact lenses are superior to cold chemical disinfection in preventing the growth of *Acanthamoeba* (*15*). Although 10 of the 20 patients who wore contact lenses used homemade saline cleaning solutions, it is not known how many of them heat-sterilized the solutions before use.

Since the clinical characteristics of *Acanthamoeba* keratitis, especially the irregular epithelial lesions, the stromal infiltrative keratitis, and edema seen in most patients may resemble HSV keratitis, many patients are initially diagnosed and treated for this infection. Until recently, the correct diagnosis was made only after detailed histologic examination of corneal tissue removed at the time of transplantation. The following clinical features are suggestive of *Acanthamoeba* keratitis: (1) severe ocular pain; (2) a characteristic 360-degree or partial paracentral stromal ring infiltrate; (3) recurrent corneal epithelial breakdown; and (4) a corneal lesion refractory to the usual medications. The diagnosis can be confirmed by vigorously scraping the cornea with a swab or platinum-tipped spatula, staining the material obtained with Giemsa or trichrome stain, and examining it at 400X with a standard light microscope. In addition, some of the corneal scrapings should be cultured on non-nutrient agar seeded with *Escherichia coli* (*1*).

Medical management of *Acanthamoeba* keratitis is complicated by the resistance of these organisms to most of the commonly used antibacterial, antifungal, antiprotozoal, and antiviral

Acanthamoeba *Keratitis — Continued*

agents. Although some patients have recently been treated successfully using ketoconazole, miconazole, and propamidine isethionate (Brolene*), penetrating keratoplasty usually has been necessary to recover useful vision (*5, 7-11*). Further studies are needed to better estimate the true risk of infection, to improve diagnostic and treatment methods, and to evaluate the ability of different lens cleaning/soaking solutions to prevent growth of *Acanthamoeba*.

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*Use of trade names if for identification only and does not imply endorsement by the U.S. Public Health Service.

Bacillus cereus — Maine

On September 22, 1985, the Maine Bureau of Health was notified of a gastrointestinal illness among patrons of a Japanese restaurant. Because the customers were exhibiting symptoms of illness while still on the restaurant premises, and because uncertainty existed as to the etiology of the problem, the local health department, in concurrence with the restaurant owner, closed the restaurant at 7:30 p.m. that same day.

Eleven (31%) of the approximately 36 patrons reportedly served on the evening of September 22 were contacted in an effort to determine the etiology of the outbreak. Those 11 comprised the last three dining parties served on September 22. Despite extensive publicity, no additional cases were reported.

Bacillus cereus – *Continued*

A case was defined as anyone who had vomiting or diarrhea within 6 hours of dining at the restaurant. All 11 individuals were interviewed for symptoms, time of onset of illness, illness duration, and foods ingested. All 11 reported nausea and vomiting; nine reported diarrhea; one reported headache; and one reported abdominal cramps. Onset of illness ranged from 30 minutes to 5 hours (mean 1 hour, 23 minutes) after eating at the restaurant. Duration of illness ranged from 5 hours to several days, except for two individuals still symptomatic with diarrhea 2 weeks after dining at the restaurant. Ten persons sought medical treatment at local emergency rooms on September 22; two ultimately required hospitalization for rehydration.

Analysis of the association of food consumption with illness was not instructive, since all persons consumed the same food items: chicken soup; fried shrimp; stir-fried rice; fried zucchini, onions, and bean sprouts; cucumber, cabbage, and lettuce salad; ginger salad dressing; hibachi chicken and steak; and tea. Five persons ordered hibachi scallops, and one person ordered hibachi swordfish. However, most individuals sampled each other's entrees.

One vomitus specimen and two stool specimens from three separate individuals yielded an overgrowth of *Bacillus cereus* organisms. The hibachi steak was also culture-positive for *B. cereus*, although an accurate bacterial count could not be made because an inadequate amount of the steak remained for laboratory analysis. No growth of *B. cereus* was reported from the fried rice, mixed fried vegetables, or hibachi chicken.

According to the owner, all meat was delivered 2-3 times a week from a local meat supplier and refrigerated until ordered by restaurant patrons. Appropriate-sized portions for a dining group were taken from the kitchen to the dining area and diced or sliced, then sauteed at the table directly in front of restaurant patrons. The meat was seasoned with soy sauce, salt, and white pepper, open containers of which had been used for at least 2 months by the restaurant. The hibachi steak was served immediately after cooking.

The fried rice served with the meal was reportedly customarily made from leftover boiled rice. It could not be established whether the boiled rice had been stored refrigerated or at room temperature.

Reported by J Vandeloski, Portland City Health Dept, KF Gensheimer, MD, State Epidemiologist, Maine Dept of Human Svcs; Enteric Diseases Br, Div of Bacterial Diseases, Center for Infectious Diseases, CDC.

Editorial Note: *B. cereus* is an anaerobic, spore-forming, gram-positive rod with a ubiquitous distribution in the environment. Spores of *B. cereus* have been found in a wide variety of cereals, pulses, vegetables, spices, and pasteurized fresh and powdered milk. Food-poisoning can result from toxins elaborated by germinating organisms, which most commonly follows from inadequate refrigeration and subsequent reheating of foods that have already been cooked.

Two different clinical syndromes appear to be associated with *B. cereus* food poisoning, which correspond to two different toxins elaborated by the bacteria. A diarrheal syndrome similar to *Campylobacter perfringens* food poisoning with an average incubation period of 10-12 hours has been associated with a heat-labile toxin elaborated by *B. cereus*. An emetic syndrome similar to staphylococcal food poisoning, with an average incubation period of 1-6 hours, has been associated with a heat-stable toxin from *B. cereus* (*1*).

The emetic syndrome has almost always been associated with fried rice served in Oriental restaurants. The common practice of storing boiled rice at room temperature for subsequent preparation of fried rice has generally been implicated in such outbreaks. However, a recent, well-documented outbreak of the emetic syndrome of *B. cereus* in a British prison implicated beef stew (*2*). This was thought to be caused by adding to the stew vegetables that were cooked a day earlier.

Bacillus cereus — *Continued*

Fresh meat cooked rapidly, then eaten immediately, seems an unlikely vehicle for *B. cereus* food poisoning. The laboratory finding of *B. cereus* in a foodstuff without quantitative cultures and without accompanying epidemiologic data is insufficient to establish its role in the outbreak. A negative culture of fried rice eaten with the meal does not exclude the obvious vehicle; reheating during preparation may eliminate the bacteria in the food without decreasing the activity of the heat-stable toxin. While the question of the specific vehicle remains incompletely resolved, the clinical and laboratory findings substantially support *B. cereus* as the cause of the outbreak.

Most episodes of food poisoning undoubtedly go unreported, and in most of those reported, the specific pathogens are never identified. Alert recognition of the clinical syndrome and appropriate laboratory work permitted identification of the role of *B. cereus* in this outbreak.

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TABLE I. Summary—cases specified notifiable diseases, United States

Disease	25th Week Ending			Cumulative, 25th Week Ending		
	June 21, 1986	June 22, 1985	Median 1981-1985	June 21, 1986	June 22, 1985	Median 1981-1985
Acquired Immunodeficiency Syndrome (AIDS)	180	246	N	5,891	3,518	N
Aseptic meningitis	190	189	162	2,248	1,992	2,049
Encephalitis: Primary (arthropod-borne & unspec.)	15	18	22	356	438	438
Post-infectious	1	2	3	51	69	53
Gonorrhea: Civilian	18,565	16,198	16,470	391,521	383,051	422,342
Military	255	360	371	7,404	9,009	11,479
Hepatitis: Type A	416	420	378	10,404	10,202	10,404
Type B	489	531	473	12,058	11,965	11,191
Non A, Non B	90	82	N	1,668	1,964	N
Unspecified	49	142	147	2,272	2,666	3,505
Legionellosis	5	14	N	245	324	N
Leprosy	3	8	3	129	182	111
Malaria	26	19	16	392	368	370
Measles: Total*	205	135	75	3,747	1,750	1,687
Indigenous	202	99	N	3,564	1,453	N
Imported	3	36	N	183	297	N
Meningococcal infections: Total	23	45	49	1,430	1,374	1,639
Civilian	23	45	49	1,428	1,369	1,624
Military	-	-	-	2	5	8
Mumps	126	45	55	2,138	1,860	2,050
Pertussis	40	35	35	1,223	807	807
Rubella (German measles)	8	53	33	286	318	655
Syphilis (Primary & Secondary): Civilian	507	499	611	11,939	11,848	14,394
Military	-	-	8	80	83	181
Toxic Shock syndrome	10	11	N	170	189	N
Tuberculosis	484	585	499	9,921	9,796	10,816
Tularemia	10	3	10	44	70	90
Typhoid fever	13	4	8	123	138	165
Typhus fever, tick-borne (RMSF)	34	32	48	205	209	304
Rabies, animal	92	98	158	2,564	2,437	3,047

TABLE II. Notifiable diseases of low frequency, United States

	Cum 1986		Cum 1986
Anthrax	-	Leptospirosis (Hawaii 1)	18
Botulism: Foodborne	4	Plague	-
Infant (Calif. 3)	25	Poliomyelitis, Paralytic	-
Other	1	Psittacosis (S.C. 1)	37
Brucellosis (Calif. 1)	31	Rabies, human	-
Cholera	-	Tetanus (Nebr. 1; Tex. 1)	22
Congenital rubella syndrome	2	Trichinosis	14
Congenital syphilis, ages < 1 year	11	Typhus fever, flea-borne (endemic, murine)	10
Diphtheria	-		

*Two of the 205 reported cases for this week were imported from a foreign country or can be directly traceable to a known internationally imported case within two generations.

TABLE III. Cases of specified notifiable diseases, United States, weeks ending June 21, 1986 and June 22, 1985 (25th Week)

Reporting Area	AIDS	Aseptic Menin-gitis	Encephalitis		Gonorrhea (Civilian)		Hepatitis (Viral), by type				Legionel-losis	Leprosy
			Primary	Post-in-fectious			A	B	NA,NB	Unspeci-fied		
	Cum 1986	1986	Cum 1986	Cum 1986	Cum 1986	Cum 1985	1986	1986	1986	1986	1986	Cum 1986
UNITED STATES	5,891	190	356	51	391,521	383,051	416	469	90	49	5	129
NEW ENGLAND	255	6	13	2	9,335	11,378	14	43	1	6	1	6
Maine	12	2	-	-	445	474	2	4	-	-	-	-
N.H.	6	-	2	-	242	235	-	-	-	-	-	-
Vt.	2	-	2	1	124	138	-	1	1	-	-	-
Mass.	134	2	3	-	3,969	4,335	4	29	-	5	1	6
R.I.	14	1	-	-	808	856	-	2	-	-	-	-
Conn.	87	1	6	1	3,747	5,340	8	7	-	1	-	-
MID ATLANTIC	2,222	24	51	4	66,164	57,392	9	15	1	3	-	11
Upstate N.Y.	212	5	19	3	7,897	7,570	4	5	-	-	-	1
N.Y. City	1,498	7	12	-	38,277	28,362	-	-	-	2	-	9
N.J.	348	12	6	-	8,504	9,516	5	10	1	1	-	-
Pa.	164	-	14	1	11,486	11,944	-	-	-	-	-	1
E.N. CENTRAL	371	27	77	7	52,795	53,452	7	36	6	2	-	4
Ohio	67	1	21	2	13,791	13,916	2	13	1	-	-	-
Ind.	38	7	9	2	5,767	5,186	1	10	-	1	-	-
Ill.	178	8	19	2	14,442	14,305	2	3	2	-	-	3
Mich.	71	11	25	1	16,467	15,136	2	10	3	1	-	1
Wis.	17	-	3	-	2,328	4,909	-	-	-	-	-	-
W.N. CENTRAL	106	9	10	8	17,285	19,022	2	8	4	-	2	2
Minn.	42	1	6	-	2,403	2,873	-	3	-	-	-	1
Iowa	8	2	4	-	1,742	2,044	-	-	2	-	1	-
Mo.	33	3	-	-	8,969	8,930	1	3	1	-	1	-
N. Dak.	2	-	-	-	147	133	-	-	-	-	-	-
S. Dak.	1	1	-	-	357	346	-	-	-	-	-	-
Nebr.	5	-	-	1	1,280	1,641	-	1	-	-	-	-
Kans.	15	2	-	7	2,387	3,055	1	1	1	-	-	1
S. ATLANTIC	759	46	51	16	94,090	83,034	64	105	15	8	1	1
Del.	12	-	3	-	1,621	1,865	-	2	-	-	-	-
Md.	78	4	16	-	11,988	13,306	6	18	2	1	-	-
D.C.	107	1	-	-	7,858	6,915	-	2	-	-	-	-
Va.	80	-	16	1	8,295	8,697	-	1	1	-	-	1
W. Va.	3	-	7	-	1,108	1,170	14	2	-	-	-	-
N.C.	36	1	8	1	15,990	16,027	1	11	2	3	-	-
S.C.	20	-	-	-	9,102	10,211	-	28	1	-	1	-
Ga.	89	11	-	1	9,359	-	4	10	1	-	-	-
Fla.	334	29	1	13	28,769	24,843	39	31	8	4	-	-
E.S. CENTRAL	83	16	25	3	32,921	33,157	6	36	5	2	-	1
Ky.	15	2	9	1	3,751	3,696	1	8	-	-	-	-
Tenn.	46	1	3	1	12,787	13,118	1	11	-	-	-	-
Ala.	14	11	12	1	9,282	10,800	3	14	5	1	-	1
Miss.	8	2	1	-	7,101	5,543	1	3	-	1	-	-
W.S. CENTRAL	448	31	36	3	49,434	52,108	40	27	7	11	-	9
Ark.	17	-	-	-	4,517	5,049	2	-	-	-	-	-
La.	82	-	2	-	8,893	10,521	1	2	1	1	-	-
Okla.	20	3	8	-	5,704	5,414	6	1	1	1	-	-
Tex.	329	28	26	3	30,320	31,122	31	24	5	9	-	9
MOUNTAIN	155	4	16	1	12,105	12,465	36	29	13	3	-	9
Mont.	3	-	-	1	337	350	1	1	1	-	-	-
Idaho	1	-	-	-	400	398	1	-	-	-	-	-
Wyo.	4	-	2	-	285	303	-	2	-	-	-	-
Colo.	82	1	3	-	3,111	3,780	3	5	1	2	-	3
N. Mex.	6	-	1	-	1,223	1,405	2	1	-	-	-	-
Ariz.	39	2	7	-	3,967	3,707	19	7	5	-	-	4
Utah	8	1	2	-	518	529	1	7	3	1	-	-
Nev.	12	-	1	-	2,264	1,993	9	6	3	-	-	2
PACIFIC	1,492	27	77	7	57,392	61,045	238	170	38	14	1	86
Wash.	50	2	10	-	4,307	4,259	7	13	1	-	1	10
Oreg.	34	-	-	-	2,300	2,997	68	24	4	1	-	-
Calif.	1,383	20	65	7	48,716	51,473	163	129	33	13	-	61
Alaska	9	1	2	-	1,405	1,441	-	2	-	-	-	-
Hawaii	16	4	-	-	664	875	-	2	-	-	-	15
Guam	-	-	-	-	64	88	-	-	-	5	-	1
P.R.	57	2	3	-	1,183	1,695	1	5	-	1	-	7
V.I.	2	-	-	-	108	235	-	-	-	-	-	-
Pac. Trust Terr.	-	-	-	-	165	421	3	-	-	-	-	18
Amer. Samoa	-	-	-	-	22	-	-	-	-	-	-	1

N: Not notifiable U: Unavailable

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending June 21, 1986 and June 22, 1985 (25th Week)

Reporting Area	Malaria	Measles (Rubeola)					Menin-gococcal infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported *		Total									
	Cum. 1986	1986	Cum. 1986	1986	Cum. 1986	Cum. 1985	Cum. 1986	1986	Cum. 1986	1986	Cum. 1986	Cum. 1985	1986	Cum. 1986	Cum. 1985
UNITED STATES	392	202	3,564	3	183	1,750	1,430	126	2,138	40	1,223	807	8	286	318
NEW ENGLAND	26	3	33	-	4	119	108	2	43	-	60	40	-	8	9
Maine	1	-	-	-	-	-	23	-	-	-	2	3	-	-	-
N.H.	1	3	9	-	-	-	5	-	10	-	23	22	-	1	2
Vt.	1	-	-	-	-	-	15	-	2	-	3	2	-	-	-
Mass.	13	-	21	-	3	112	21	-	3	-	16	5	-	4	6
R.I.	4	-	2	-	-	-	15	2	9	-	1	4	-	2	-
Conn.	6	-	1	-	1	7	27	-	19	-	15	4	-	1	1
MID. ATLANTIC	43	58	1,227	-	20	162	217	2	105	4	104	71	-	27	118
Upstate N.Y.	12	5	32	-	19	77	71	-	38	2	69	38	-	19	12
N.Y. City	11	32	304	-	1	42	45	-	5	-	3	9	-	5	83
N.J.	7	19	869	-	-	20	29	-	29	-	7	2	-	3	11
Pa.	13	2	22	-	-	23	72	2	33	2	25	22	-	-	12
E.N. CENTRAL	18	74	596	2	14	412	190	108	1,284	-	181	120	3	17	20
Ohio	6	-	-	-	8	44	80	1	89	-	74	18	-	-	-
Ind.	-	-	-	-	-	1	17	-	21	-	22	11	-	-	-
Ill.	6	67	397	2†	3	259	47	92	827	-	21	20	2	11	5
Mich.	6	7	22	-	-	52	44	13	199	-	21	15	1	4	14
Wis.	-	-	177	-	3	56	2	-	148	-	43	56	-	2	1
W.N. CENTRAL	11	16	188	-	16	9	75	1	67	-	67	63	1	9	18
Minn.	3	6	37	-	4	4	16	-	1	-	31	14	-	-	2
Iowa	1	6	31	-	1	-	10	1	14	-	9	3	-	1	-
Mo.	4	4	15	-	6	2	24	-	12	-	5	13	-	1	7
N. Dak.	-	-	12	-	1	2	-	-	2	-	3	7	-	-	2
S. Dak.	-	-	-	-	-	-	4	-	1	-	8	1	-	-	-
Nebr.	2	-	-	-	-	-	8	-	-	-	-	3	-	-	-
Kans.	1	-	93	-	4	1	13	-	37	-	11	22	1	7	7
S. ATLANTIC	51	5	389	-	50	189	281	1	123	9	427	178	-	9	30
Del.	-	-	1	-	-	-	1	-	-	1	217	-	-	-	1
Md.	9	-	19	-	8	35	36	-	10	8	76	74	-	-	1
D.C.	-	-	-	-	-	3	4	-	-	-	-	-	-	-	-
Va.	10	3	24	-	24	19	50	1	24	-	15	5	-	-	1
W. Va.	2	-	2	-	-	31	3	-	33	-	5	1	-	-	9
N.C.	4	-	1	-	1	9	46	-	11	-	18	9	-	-	-
S.C.	3	-	274	-	-	-	24	-	11	-	5	-	-	-	3
Ga.	5	2	56	-	14	8	44	-	12	-	74	57	-	-	-
Fla.	18	-	12	-	3	84	73	-	22	-	17	32	-	9	15
E.S. CENTRAL	8	25	28	-	-	1	82	1	19	-	21	9	-	1	2
Ky.	2	-	-	-	-	-	17	-	3	-	1	3	-	1	2
Tenn.	-	25	26	-	-	-	33	1	13	-	5	2	-	-	-
Ala.	3	-	-	-	-	-	22	-	2	-	15	2	-	-	-
Miss.	3	-	2	-	-	1	10	-	1	-	-	2	-	-	-
W.S. CENTRAL	31	-	496	-	28	220	115	2	132	2	94	124	-	52	22
Ark.	-	-	276	-	2	-	16	-	7	2	5	11	-	-	1
La.	4	-	1	-	-	27	16	-	2	-	5	5	-	-	-
Okla.	3	-	10	-	2	-	15	N	N	-	56	71	-	-	1
Tex.	24	-	209	-	24	193	68	2	123	-	28	37	-	52	20
MOUNTAIN	14	7	262	1	22	457	70	2	183	5	122	35	1	16	4
Mont.	-	-	1	-	7	137	7	-	5	-	5	3	-	1	-
Idaho	1	-	1	-	-	115	1	1	4	-	27	-	-	-	1
Wyo.	-	-	-	-	-	-	2	-	-	-	1	-	-	-	-
Colo.	3	-	2	1§	5	6	11	-	9	-	36	10	-	1	-
N. Mex.	1	-	26	-	5	3	6	N	N	-	11	4	-	-	2
Ariz.	5	6	231	-	5	196	14	1	153	4	28	10	-	1	1
Utah	2	1	1	-	-	-	8	-	9	1	14	8	1	10	-
Nev.	2	-	-	-	-	-	21	-	3	-	-	-	-	3	-
PACIFIC	190	14	345	-	29	181	294	9	182	20	147	167	3	147	95
Wash.	14	-	70	-	14	28	42	-	7	2	51	24	-	6	2
Oreg.	13	-	-	-	4	3	21	N	N	-	8	19	-	-	1
Calif.	163	14	256	-	10	134	221	9	161	17	82	112	3	139	58
Alaska	-	-	-	-	-	-	9	-	5	-	2	9	-	-	1
Hawaii	-	-	19	-	1	16	1	-	9	1	4	3	-	2	33
Guam	1	-	3	-	-	10	-	-	4	-	-	-	-	2	1
P.R.	4	-	18	-	-	48	2	-	20	-	7	5	-	58	20
V.I.	-	-	-	-	-	10	-	-	10	-	-	-	-	-	-
Pac. Trust Terr.	-	-	-	-	-	-	1	-	4	-	-	-	-	-	-
Amer. Samoa	-	-	2	-	-	-	-	-	1	-	-	-	-	1	-

*For measles only, imported cases includes both out-of-state and international importations.

N: Not notifiable U: Unavailable †International §Out-of-state

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending June 21, 1986 and June 22, 1985 (25th Week)

Reporting Area	Syphilis (Civilian) (Primary & Secondary)		Toxic-shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1986	Cum. 1985	1986	Cum. 1986	Cum. 1985	Cum. 1986	Cum. 1986	Cum. 1986	Cum. 1986
UNITED STATES	11,939	11,848	10	9,921	9,795	44	123	205	2,564
NEW ENGLAND	249	266	-	315	328	-	4	2	3
Maine	15	7	-	26	22	-	-	-	-
N.H.	7	6	-	9	14	-	-	-	-
Vt.	6	3	-	10	4	-	-	-	-
Mass.	129	138	-	144	197	-	3	1	-
R.I.	16	7	-	24	27	-	-	-	1
Conn.	76	105	-	102	64	-	1	1	2
MID ATLANTIC	1,740	1,656	-	1,969	1,786	-	13	7	185
Upstate N.Y.	88	115	-	299	296	-	2	1	32
N.Y. City	984	1,031	-	964	911	-	5	2	-
N.J.	325	342	-	361	212	-	5	1	7
Pa.	343	168	-	345	367	-	1	3	146
E.N. CENTRAL	492	545	-	1,239	1,157	-	8	34	61
Ohio	64	74	-	211	213	-	1	33	5
Ind.	58	52	-	139	142	-	-	-	10
Ill.	269	275	-	549	511	-	1	1	18
Mich.	74	114	-	283	231	-	5	-	11
Wis.	27	30	-	57	60	-	1	-	17
W.N. CENTRAL	117	120	1	286	257	12	5	13	416
Minn.	18	28	-	71	44	-	1	1	45
Iowa	7	14	-	23	37	1	-	-	93
Mo.	63	55	-	141	123	9	4	5	44
N. Dak.	2	1	-	4	2	-	-	-	99
S. Dak.	1	4	-	13	14	2	-	1	89
Nebr.	11	6	-	5	9	-	-	3	9
Kans.	15	12	1	29	28	-	-	3	37
S. ATLANTIC	3,295	2,939	1	1,927	2,039	6	14	80	608
Del.	22	17	-	21	18	-	-	1	-
Md.	214	199	-	135	187	1	4	7	321
D.C.	157	178	-	70	87	-	1	-	-
Va.	193	151	-	171	184	2	3	15	96
W. Va.	9	8	-	53	48	-	2	4	13
N.C.	242	325	-	275	246	1	2	23	3
S.C.	312	384	1	243	257	-	-	24	21
Ga.	383	-	-	276	330	2	-	6	83
Fla.	1,763	1,677	-	683	682	-	2	-	71
E.S. CENTRAL	798	968	1	890	902	5	1	27	145
Ky.	39	33	1	218	194	2	-	5	48
Tenn.	299	284	-	272	279	3	-	9	56
Ala.	269	316	-	289	286	-	-	6	41
Miss.	191	335	-	111	143	-	1	7	-
W.S. CENTRAL	2,544	2,981	4	1,221	1,122	18	8	36	415
Ark.	126	151	-	164	116	11	-	2	98
La.	428	519	-	186	177	1	-	-	11
Okla.	70	83	4	117	128	4	1	27	34
Tex.	1,920	2,228	-	754	701	2	7	7	272
MOUNTAIN	280	354	2	223	231	2	7	6	409
Mont.	4	2	-	11	29	-	1	3	145
Idaho	5	3	-	10	11	-	-	-	-
Wyo.	-	6	-	-	5	-	-	1	192
Colo.	79	89	-	10	30	-	1	2	-
N. Mex.	33	45	-	49	45	1	-	-	4
Ariz.	121	187	-	107	99	-	2	-	67
Utah	7	4	1	21	6	1	2	-	-
Nev.	31	18	1	15	6	-	1	-	1
PACIFIC	2,424	2,019	1	1,851	1,973	1	63	-	322
Wash.	52	63	1	97	109	-	2	-	2
Oreg.	55	43	-	68	71	-	-	-	-
Calif.	2,296	1,872	-	1,567	1,647	-	57	-	312
Alaska	-	2	-	27	56	1	1	-	8
Hawaii	21	39	-	92	90	-	3	-	-
Guam	1	2	-	30	23	-	-	-	-
P.R.	421	390	-	134	164	-	3	-	19
V.I.	-	1	-	1	1	-	-	-	-
Pac. Trust Terr.	142	40	-	25	29	-	39	-	-
Amer. Samoa	-	-	-	3	-	-	-	-	-

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending June 21, 1986 (25th Week)

Reporting Area	All Causes, By Age (Years)						P&I** Total
	All Ages	≥65	45-64	25-44	1-24	<1	
NEW ENGLAND	635	426	128	49	11	20	43
Boston, Mass.	180	107	38	19	5	11	16
Bridgeport, Conn.	36	22	12	2	-	-	2
Cambridge, Mass.	24	22	2	-	-	-	5
Fall River, Mass.	31	26	4	1	-	-	-
Hartford, Conn.	52	31	14	2	2	3	1
Lowell, Mass.	12	12	-	-	-	-	1
Lynn, Mass.	19	14	5	-	-	-	2
New Bedford, Mass.	29	21	7	1	-	-	2
New Haven, Conn.	62	34	15	11	2	-	3
Providence, R.I.	46	32	8	3	-	3	3
Somerville, Mass.	8	7	1	-	-	-	-
Springfield, Mass.	49	37	7	4	1	-	2
Waterbury, Conn.	30	24	3	2	-	-	1
Worcester, Mass.	57	37	12	4	1	3	5
MID ATLANTIC	2,660	1,790	526	240	68	36	118
Albany, N.Y.	47	29	14	-	3	1	3
Allentown, Pa.	32	24	6	2	-	-	-
Buffalo, N.Y.	68	42	12	7	2	5	4
Camden, N.J.	46	26	11	2	2	4	2
Elizabeth, N.J.	18	13	4	1	-	-	2
Erie, Pa.†	37	27	8	2	-	-	1
Jersey City, N.J.	39	31	4	2	1	1	3
N.Y. City, N.Y.	1,471	971	280	171	36	13	60
Newark, N.J.	40	20	9	7	3	1	-
Paterson, N.J.	26	18	4	3	-	1	2
Philadelphia, Pa.	396	274	91	25	5	1	20
Pittsburgh, Pa.†	73	51	13	5	2	2	1
Reading, Pa.	34	27	6	-	1	-	2
Rochester, N.Y.	127	85	24	8	6	4	8
Schenectady, N.Y.	24	22	2	-	-	-	1
Scranton, Pa.†	28	18	8	-	2	-	-
Syracuse, N.Y.	72	52	13	2	3	2	6
Trenton, N.J.	29	19	6	2	2	-	-
Utica, N.Y.	27	18	9	-	-	-	-
Yonkers, N.Y.	27	23	2	1	-	1	3
E.N. CENTRAL	2,202	1,448	480	148	57	69	85
Akron, Ohio	73	47	16	3	4	3	-
Canton, Ohio	29	25	3	1	-	-	5
Chicago, Ill.§	564	362	125	45	10	22	16
Cincinnati, Ohio§	139	90	31	8	6	4	12
Cleveland, Ohio	148	93	24	15	10	6	-
Columbus, Ohio	129	85	27	8	4	5	-
Dayton, Ohio	105	57	34	11	1	2	6
Detroit, Mich.	230	146	52	21	6	5	4
Evansville, Ind.	36	24	9	2	1	-	2
Fort Wayne, Ind.	47	32	11	2	1	1	4
Gary, Ind.	17	9	3	2	2	1	2
Grand Rapids, Mich.	60	41	11	4	2	2	4
Indianapolis, Ind.	144	90	41	5	3	5	2
Madison, Wis.	32	16	7	5	3	1	4
Milwaukee, Wis.	135	102	24	4	-	5	5
Peoria, Ill.	33	24	9	-	-	-	4
Rockford, Ill.	35	23	8	-	1	3	4
South Bend, Ind.	37	27	6	1	1	2	5
Toledo, Ohio	131	102	23	3	1	2	6
Youngstown, Ohio	78	53	16	8	1	-	-
W.N. CENTRAL	679	455	134	34	24	32	33
Des Moines, Iowa	68	40	17	3	6	2	5
Duluth, Minn.	29	23	6	-	-	-	5
Kansas City, Kans.	36	18	8	3	2	5	-
Kansas City, Mo.	97	66	18	7	4	2	11
Lincoln, Nebr.	24	15	7	1	1	-	-
Minneapolis, Minn.	95	55	21	6	3	10	1
Omaha, Nebr.	68	52	13	2	1	-	3
St. Louis, Mo.	141	106	16	8	3	8	2
St. Paul, Minn.	61	41	13	3	1	3	2
Wichita, Kans.	60	39	15	1	3	2	4
S. ATLANTIC	1,151	658	266	125	60	42	43
Atlanta, Ga.	142	92	28	16	3	3	3
Baltimore, Md.	199	61	57	47	26	8	1
Charlotte, N.C.	65	39	20	4	1	1	4
Jacksonville, Fla.	105	68	18	10	4	5	4
Miami, Fla.	93	47	23	17	4	2	3
Norfolk, Va.	64	44	11	1	6	2	2
Richmond, Va.	77	50	19	3	1	4	4
Savannah, Ga.	50	33	7	5	3	2	5
St. Petersburg, Fla.	86	66	13	4	1	2	8
Tampa, Fla.	66	40	16	4	3	3	4
Washington, D.C.	190	103	47	13	7	10	5
Wilmington, Del.	24	15	7	1	1	-	-
E.S. CENTRAL	741	473	164	59	24	21	28
Birmingham, Ala.	133	79	33	14	2	5	3
Chattanooga, Tenn.	64	39	16	4	3	2	9
Knoxville, Tenn.	93	56	25	7	3	2	4
Louisville, Ky.	83	61	16	4	-	2	6
Memphis, Tenn.	156	104	26	14	8	4	-
Mobile, Ala.	60	38	15	4	1	2	1
Montgomery, Ala.	52	32	12	3	4	1	1
Nashville, Tenn.	100	64	21	9	3	3	4
W.S. CENTRAL	1,276	762	296	121	47	50	48
Austin, Tex.	51	32	8	5	2	4	4
Baton Rouge, La.	30	20	10	-	-	-	2
Corpus Christi, Tex.§	37	24	9	3	1	-	1
Dallas, Tex.	199	101	53	23	12	10	5
El Paso, Tex.	47	28	12	4	2	1	4
Fort Worth, Tex.	91	57	22	3	5	4	2
Houston, Tex.	284	155	72	36	6	15	6
Little Rock, Ark.	60	36	10	10	2	2	1
New Orleans, La.	125	81	25	8	8	3	1
San Antonio, Tex.	196	129	39	18	5	5	14
Shreveport, La.	72	52	12	3	1	4	2
Tulsa, Okla.	84	47	24	8	3	2	4
MOUNTAIN	597	345	145	54	26	27	28
Albuquerque, N.Mex.	90	49	22	10	4	5	5
Colo. Springs, Colo.	28	17	7	1	3	-	3
Denver, Colo.	103	60	28	9	3	3	5
Las Vegas, Nev.	84	31	30	14	5	4	4
Ogden, Utah	21	15	2	-	1	3	1
Phoenix, Ariz.	125	81	28	7	4	5	2
Pueblo, Colo.	18	12	4	2	-	-	3
Salt Lake City, Utah	39	21	7	3	3	5	-
Tucson, Ariz.	89	59	17	8	3	2	5
PACIFIC	1,883	1,222	363	173	73	46	91
Berkeley, Calif.	12	9	2	1	-	-	-
Fresno, Calif.	66	49	7	6	3	1	7
Glendale, Calif.	28	23	3	-	1	-	1
Honolulu, Hawaii	59	39	11	3	6	-	-
Long Beach, Calif.	81	53	16	5	4	1	13
Los Angeles, Calif.	603	371	125	59	31	13	13
Oakland, Calif.§	68	46	12	7	1	2	5
Pasadena, Calif.	27	23	2	-	1	1	1
Portland, Oreg.	137	102	22	5	5	2	7
Sacramento, Calif.	145	92	32	14	5	2	8
San Diego, Calif.	144	82	26	22	5	9	10
San Francisco, Calif.	151	85	30	28	4	4	6
San Jose, Calif.	141	87	35	12	3	4	9
Seattle, Wash.	127	93	23	7	2	2	4
Spokane, Wash.	54	40	10	1	1	2	5
Tacoma, Wash.	40	28	5	3	1	3	2
TOTAL	11,824††		7,579	2,502	1,003	390	343	615

* Mortality data in this table are voluntarily reported from 121 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

** Pneumonia and influenza.

† Because of changes in reporting methods in these 3 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

†† Total includes unknown ages.

§ Data not available. Figures are estimates based on average of past 4 weeks.

Perspectives in Disease Prevention and Health Promotion

The Secretary's Community Health Promotion Awards

On June 18, 1986, the Secretary of the U.S. Department of Health and Human Services (DHHS), announced the recipients of the 1986 Secretary's Community Health Promotion Awards. Fifty-six programs, representing 29 states and the District of Columbia, were awarded the Secretary's Award for Excellence in Community Health Promotion, and 141 received the Secretary's Outstanding Community Health Promotion Program Certificate of Merit. The Awards are a cooperative effort between DHHS and all official state and territorial health agencies.

A wide range of preventive efforts concerning today's leading health problems were addressed by the projects recognized as excellent—these are listed below under the categories of the 1990 health objectives for the nation (*1*).

HEALTH PROMOTION

Smoking and Health

Minnesota Coalition for a Smoke-Free Society by the Year 2000 (Minneapolis, Minnesota).
Smokeless Tobacco Education: Trouble in a Pinch (Kansas City, Missouri).
Rhode Island Youth Council on Smoking (Providence, Rhode Island).

Misuse of Alcohol and Drugs

FACE (Madawaska, Maine).
Montana Teenage Institute on Substance Abuse (Helena, Montana).
Substance Abuse Prevention Program (Albuquerque, New Mexico).
Student Assistance Programs (Philadelphia, Pennsylvania).

Nutrition

St. Vincent Infirmary/KATV Newscene 7 Colorectal Cancer Screening Project (Little Rock, Arkansas).
San Jose Nutrition Education Project (San Jose, California).
First Free Cholesterol Screening Project (Omaha, Nebraska).
Medcenter One Diabetes Education Program (Bismarck, North Dakota).
Colorectal Cancer Screening Campaign (Portland, Oregon).

Physical Fitness and Exercise

Zuni Fitness/Weight Control Program (Zuni, New Mexico).
Slim For Life and Slim For Life Plus (Salt Lake City, Utah).
Health Maintenance Program of the Honolulu Gerontology Program (Island of Oahu, Hawaii).
YMCA Folksmarch (New York City).
Mesa Physical Fitness Program (Amarillo, Texas).
The Health Education and Physical Fitness Project for Older Adults (Fairfax County, Virginia).

General

Contra Costa County Health Services Department Prevention Program (Martinez, California).
Elderly Health Screening Service, Inc. (Waterbury, Connecticut).
LifeReach (Atlanta, Georgia).
Community Care Program (Island of Oahu, Hawaii).
Growing Wiser (Boise, Idaho).

Health Promotion Awards — Continued

Health Expo '85 (Sac City, Iowa).
Planned Approach to Community Health (PATCH) (Butler County, Kansas).
Senior Citizens' Wellness Program—Growing Younger (Butler and Greenwood Counties, Kansas).
S.E.L.F. (Sharing, Exercise, Lifestyles, and Fitness)—A Model Worksite Health Promotion Program (Crescent Springs, Kentucky).
Ambulatory Diabetes Education and Follow-Up (ADEF) Program (Maine [statewide]).
The Center for Health Promotion—A Rural Health Promotion Project (Lewellen, Nebraska).
Scudder Homes Health Awareness Program (Newark, New Jersey).
Columbus Satellite Health Program (Columbus, New Mexico).
Heart Health in Hamilton County Project (Hamilton County, Ohio).
Multnomah County Employee Health Promotion Program (Multnomah County, Oregon).
Healthy People Program (Allentown, Pennsylvania).
CHIP (Lycoming County Health Improvement Program) (Williamsport, Pennsylvania).
Channel 5 Health Fair (Nashville, Tennessee).
Health Enhancement Program (Nashville, Tennessee).
Health Adventure (Harris County, Houston, Texas).
Family High Risk Program (Salt Lake City, Utah).
Impedance Screening (Clarksburg, West Virginia).

PREVENTIVE HEALTH SERVICES

High Blood Pressure Control

Worksite Hypertension Program/Heart Healthy Lifestyles (Hennepin County, Minnesota).
Monmouth Hypertension Control Project (M.H.C.P.) Monmouth County, New Jersey).
Senior Volunteer Hypertension Screening and Monitoring Program (SVHSMP) (New York City.

Family Planning and Pregnancy and Infant Health

Prevention of Teenage Pregnancies (Washington, D.C.).
Pregnant Adolescent Group for Education and Support (P.A.G.E.S.) (Lake County, Illinois).
Infant Mortality Reduction Program (Bell County, Kentucky, and Claiborne County, Tennessee).
Parent Child Task Force (Richmond, Virginia).

Immunization

The Immunization Education Program at Oakwood Hospital (Dearborn, Michigan).

HEALTH PROTECTION

Accident Prevention and Injury Control

Operation Childsaver (Sarasota, Florida).
Get Caught Missoula (Missoula County, Montana).
Greeneville/Greene County Youth Alcohol Highway Safety Pilot Project (Greeneville, Tennessee).
Don't Buck The Odds. Buckle Up (Dallas, Fort Worth Metroplex Area, Texas).
Operation Graduation 1985 (Salt Lake City, Utah).

Fluoridation and Dental Health

Children's Dental Disease Prevention Program (California [statewide]).
Children's Dental Health Program (Red Wing, Minnesota).

Surveillance and Control of Infectious Diseases

Health Promotion in Day Care Settings (Guilford County, Greensboro, North Carolina).

Health Promotion Awards – Continued

Full descriptions of the programs are available from the respective state health agencies; a publication describing the Secretary's Health Promotion Awards Program and the awards for 1986 will be available in July from the Center for Health Promotion and Education, CDC; descriptive abstracts of all 197 projects are currently available in the computerized Combined Health Information Database on BRS Information Technologies.

Reported by the Div of Health Education, Center for Health Promotion and Education, CDC.

Editorial Note: The Secretary's Community Health Promotion Award was established in 1982 to recognize exemplary local community and state efforts to improve the health of their citizens. In addition, explicit identification of successful community projects promotes them as models for efforts in other communities. Projects aimed at risk reduction for chronic diseases, injuries, infant mortality, and others are eligible and have been recognized in the past. Criteria for award include documentation of evaluation of impact on the selected health problems. Interested agencies should contact the community health agencies identified here regarding specific projects or the respective state health department regarding the Secretary's Community Health Promotion Award process.

Reference

1. U.S. Department of Health and Human Services. Promoting health/preventing disease: objectives for the nation. Washington, D.C., U.S. Department of Health and Human Services, 1980.

Epidemiologic Notes and Reports

Bacteremia Associated with Reuse Of Disposable Hollow-Fiber Hemodialyzers

Since May 6, 1986, CDC and the U.S. Food and Drug Administration (FDA) have received reports from four free-standing hemodialysis clinics of clusters of patients with gram-negative bacteremia. These patients were undergoing maintenance hemodialysis at clinics in which disposable hollow-fiber hemodialyzers were reused on the same patient after disinfection with a recently introduced chemical germicide, RenNew-D (manufactured by Alcide Corporation, Norwalk, Connecticut, and solely distributed by Cobe Laboratories, Inc., Lakewood, Colorado).

CDC and FDA have participated in investigations of these clusters at two of the four clinics. A total of nine patients at these two clinics met a case definition of intradialytic sepsis based on the following criteria: (1) absence of signs or symptoms of infection at the initiation of the dialysis session; (2) presence of one or more of the following signs or symptoms during the dialysis session: shaking chills, fever, hypotension, nausea, vomiting; and (3) growth of gram-negative microorganisms from blood cultures obtained during or following the dialysis session. Review of microbiologic records in these centers showed no clusters of gram-negative bacteremia during the preceding 6 months. All the patients were treated with parenteral antimicro-

Bacteremia – Continued

bials and recovered without apparent sequelae. Microorganisms isolated from the blood cultures included *Pseudomonas aeruginosa* (five patients), *P. maltophilia* (three), *Acinetobacter calcoaceticus* (var. lwoffi) (three), *P. putida* (one), and *Alcaligenes denitrificans* (one). Three patients had two or more microorganisms isolated from their blood. These two hemodialysis clinics had been using RenNew-D for reprocessing of hemodialyzers for 6 weeks and 4 months, respectively, before the first documented case of bacteremia.

Microbiologic investigation of hemodialyzers at one of the four clinics showed bacterial contamination of the blood compartment in 10 of 20 hemodialyzers after reprocessing with RenNew-D during the week of June 9. For the 17 hemodialyzers for which the number of reuses was documented, the number of previous uses ranged from one to 50. Changes in the mixing and handling of RenNew-D were subsequently made by the staff at the hemodialysis clinic after consultation with representatives of the manufacturer and distributor of the product. Following these changes, cultures were performed of: (1) RenNew-D drained from stored reprocessed hemodialyzers; (2) saline that had been used to rinse the blood circuits, including the interiors of reprocessed hemodialyzers and other components of the blood circuits, before dialysis; and (3) blood obtained from the blood circuit during the patients' dialyses. Gram-negative microorganisms were identified in none of 137 samples of RenNew-D, in seven (6%) of 108 samples of the predialysis saline rinse, and in blood cultures from 11 (11%) of 102 patients.

It has not been determined why hemodialyzers showed evidence of contamination after reprocessing with RenNew-D. The manufacturer has initiated a voluntary recall of all lots of the product. Studies are in progress to evaluate the source and possible causes of these clusters.

Reported by GT Flynn, Community Dialysis Svcs, Inglewood, SH Waterman, MD, Los Angeles County Health Dept, SB Werner, MD, California Dept of Health Svcs; TF Parker, MD, Dallas Kidney Disease Center, G Green, MD, CE Haley, MD, Dallas County Health Dept, CE Alexander, MD, State Epidemiologist, Texas Dept of Health; Center for Devices and Radiologic Health, US Food and Drug Administration; Hospital Infections Program, Center for Infectious Diseases, CDC.

Editorial Note: The practice of disinfecting and reusing hemodialyzers labeled "for single use only" has been adopted by more than 50% of hemodialysis centers responding to surveys of dialysis-associated diseases (*1*). Bacterial contamination resulting in patient infections has previously been documented in hemodialyzers that were reprocessed with benzalkonium chloride (*2,3*) and 2% formaldehyde (*4*).

Until further information is available, CDC recommends that providers of hemodialysis services review their experience and assess the clinical safety of their hemodialysis practices. Evaluation of reuse programs should include active surveillance of hemodialysis patients for both infectious and noninfectious complications. Clinical, laboratory, and epidemiologic information about patients experiencing adverse reactions should be recorded in the patient's medical record, as well as in a log book, so that incidence rates of these complications can be determined. Additional studies of the functional and microbiologic quality of reprocessed hemodialyzers, as well as the factors affecting their clinical safety, are needed to formulate guidelines.

References

1. Bland L, Alter M, Favero M, Carson L, Cusick L. Hemodialyzer reuse: practices in the United States and implication for infection control. Trans Am Soc Artificial Intern Organs 1985;31:556-9.
2. Wagnild JP, McDonald P, Craig WA, et al. Pseudomonas aeruginosa bacteremia in a dialysis unit. II. Relationship to reuse of coils. Am J Med 1977;62:672-6.
3. Kuehnel E, Lundh H. Outbreak of Pseudomonas cepacia bacteremia related to contaminated reused coils. Dialysis and Transplantation 1976;5:44-5, 48, 66.
4. Bolan G, Reingold AL, Carson LA, et al. Infections with *Mycobacterium chelonei* in patients receiving dialysis and using processed hemodialyzers. J Infect Dis 1985;152:1013-9.

Notice to Readers

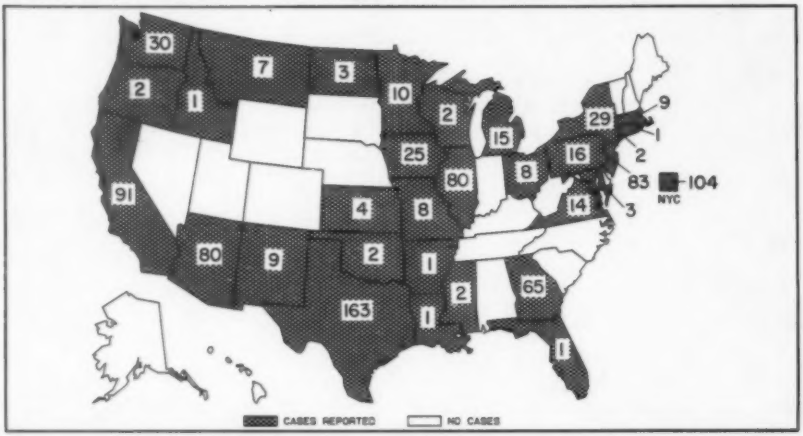
First National Conference on Chronic Disease Prevention and Control

The First National Conference on Chronic Disease Prevention and Control will be held September 9-11, 1986, in Atlanta, Georgia, cosponsored by the Association of State and Territorial Health Officials and CDC. For information, contact the Division of Chronic Disease Control, Center for Environmental Health, CDC, telephone: commercial—(404) 452-4255; FTS—236-4255.

Erratum: Vol. 35, No. 17

p. 317 In the article, "Prevention and Control of Influenza," the last part of the last (**) footnote of Table 1 on page 319 should read: . . . influenza vaccine recommended from 1978-1979 to 1985-1986, one dose is sufficient.

FIGURE I. Reported measles cases — United States, weeks 21-24, 1986



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The data in this report are provisional, based on weekly reports to CDC by state health departments. The reporting week concludes at close of business on Friday; compiled data on a national basis are officially released to the public on the succeeding Friday.

The editor welcomes accounts of interesting cases, outbreaks, environmental hazards, or other public health problems of current interest to health officials. Such reports and any other matters pertaining to editorial or other textual considerations should be addressed to: ATTN: Editor, *Morbidity and Mortality Weekly Report*, Centers for Disease Control, Atlanta, Georgia 30333.

Director, Centers for Disease Control
James O. Mason, M.D., Dr.P.H.
Director, Epidemiology Program Office
Carl W. Tyler, Jr., M.D.

Editor
Michael B. Gregg, M.D.
Assistant Editor
Karen L. Foster, M.A.

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